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1 Testing I: Automatic test factoring for java

David Saff, Shay Artzi, Jeff H. Perkins, Michael D. Ernst
November 2005 **Proceedings of the 20th IEEE/ACM international Conference on Automated software engineering ASE '05**
Publisher: ACM Press

Full text available: pdf(292.40 KB) Additional Information: full citation, abstract, references, citings, index terms

Test factoring creates fast, focused unit tests from slow system-wide tests; each new unit test exercises only a subset of the functionality exercised by the system test. Augmenting a test suite with factored unit tests should catch errors earlier in a test run.One way to factor a test is to introduce *mock objects*. If a test exercises a component T, which interacts with another component E (the "environment"), the implementation of E can be replaced by a *mock*. The mock check ...

Keywords: mock objects, test factoring, unit testing

2 Real-time shading

Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi Rost
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press

Full text available: pdf(7.39 MB) Additional Information: full citation, abstract

Real-time procedural shading was once seen as a distant dream. When the first version of this course was offered four years ago, real-time shading was possible, but only with one-of-a-kind hardware or by combining the effects of tens to hundreds of rendering passes. Today, almost every new computer comes with graphics hardware capable of interactively executing shaders of thousands to tens of thousands of instructions. This course has been redesigned to address today's real-time shading capabili ...

3 Jockey: a user-space library for record-replay debugging

Yasushi Saito
September 2005 **Proceedings of the sixth international symposium on Automated analysis-driven debugging AADEBUG'05**
Publisher: ACM Press

Full text available: pdf(159.94 KB) Additional Information: full citation, abstract, references, index terms

Jockey is an execution record/replay tool for debugging Linux programs. It records invocations of system calls and CPU instructions with timing-dependent effects and later replays them deterministically. It supports process checkpointing to diagnose long-running programs efficiently. Jockey is implemented as a shared-object file that runs as a part of the target process. While this design is the key for achieving Jockey's goal of safety and ease of use, it also poses challenges. This paper discu ...

Keywords: Linux, checkpointing, debugging, execution record and replay, jockey, keywords, x86

4 Workshop on Dynamic Analysis (WODA): Selective capture and replay of program executions

Alessandro Orso, Bryan Kennedy

May 2005 **ACM SIGSOFT Software Engineering Notes , Proceedings of the third international workshop on Dynamic analysis WODA '05**, Volume 30 Issue 4

Publisher: ACM Press

Full text available: pdf(167.30 KB) Additional Information: full citation, abstract, references, citings, index terms

In this paper, we present a technique for selective capture and replay of program executions. Given an application, the technique allows for (1) selecting a subsystem of interest, (2) capturing at runtime all the interactions between such subsystem and the rest of the application, and (3) replaying the recorded interactions on the subsystem in isolation. The technique can be used in several scenarios. For example, it can be used to generate test cases from users' executions, by capturing and col ...

5 Practitioners report: Agile regression testing using record & playback

Gerard Meszaros

October 2003 **Companion of the 18th annual ACM SIGPLAN conference on Object-oriented programming, systems, languages, and applications OOPSLA '03**

Publisher: ACM Press

Full text available: pdf(267.25 KB) Additional Information: full citation, abstract, references, index terms

There are times when it is not practical to hand-script automated tests for an existing system before one starts to modify it (whether to refactor it to permit automated testing or to add new functionality). In these circumstances, the use of "record & playback" testing may be a viable alternative to handwriting all the tests.This paper describes experiences using this approach and summarizes key learnings applicable to other projects.

Keywords: JUnit, XML, acceptance test, automated testing, best practices, functional test, patterns, playback, record, robot user, user interface

6 Debugging heterogeneous applications with Pangaea

Leesa Hicks, Francine Berman

January 1996 **Proceedings of the SIGMETRICS symposium on Parallel and distributed tools SPDT '96**

Publisher: ACM Press

Full text available: pdf(1.41 MB) Additional Information: full citation, references, citings, index terms

7 A confederation of tools for capturing and accessing collaborative activity

Scott Minneman, Steve Harrison, Bill Janssen, Gordon Kurtenbach, Thomas Moran, Ian

Smith, Bill van Melle
January 1995 **Proceedings of the third ACM international conference on Multimedia MULTIMEDIA '95**
Publisher: ACM Press
Full text available: htm(73.96 KB) Additional Information: full citation, references, citings, index terms

Keywords: CSCW, activity capture, content-and content-based indexing and retrieval, digital audio and video, distributed multimedia systems, real-time indexing, usability, user interfaces

8 A Technique for Enabling and Supporting Debugging of Field Failures
James Clause, Alessandro Orso
May 2007 **Proceedings of the 29th International Conference on Software Engineering ICSE '07**
Publisher: IEEE Computer Society
Full text available: pdf(1.38 MB) Additional Information: full citation, abstract

It is difficult to fully assess the quality of software inhouse, outside the actual time and context in which it will execute after deployment. As a result, it is common for software to manifest field failures, failures that occur on user machines due to untested behavior. Field failures are typically difficult to recreate and investigate on developer platforms, and existing techniques based on crash reporting provide only limited support for this task. In this paper, we present a technique for ...

9 Replay compilation: improving debuggability of a just-in-time compiler
Kazunori Ogata, Tamiya Onodera, Kiyokuni Kawachiya, Hideaki Komatsu, Toshio Nakatani
October 2006 **ACM SIGPLAN Notices , Proceedings of the 21st annual ACM SIGPLAN conference on Object-oriented programming systems, languages, and applications OOPSLA '06**, Volume 41 Issue 10
Publisher: ACM Press
Full text available: pdf(314.71 KB) Additional Information: full citation, abstract, references, index terms

The performance of Java has been tremendously improved by the advance of Just-in-Time (JIT) compilation technologies. However, debugging such a dynamic compiler is much harder than a static compiler. Recompiling the problematic method to produce a diagnostic output does not necessarily work as expected, because the compilation of a method depends on runtime information at the time of compilation.In this paper, we propose a new approach, called *replay JIT compilation*, which can reproduce t ...

Keywords: JIT compiler, Java, debuggability, deterministic replay, dynamic optimization, problem determination, replay compilation

10 Instrumentation: Framework for instruction-level tracing and analysis of program executions
Sanjay Bhansali, Wen-Ke Chen, Stuart de Jong, Andrew Edwards, Ron Murray, Milenko Drinić, Darek Mihočka, Joe Chau
June 2006 **Proceedings of the second international conference on Virtual execution environments VEE '06**
Publisher: ACM Press
Full text available: pdf(227.87 KB) Additional Information: full citation, abstract, references, index terms

Program execution traces provide the most intimate details of a program's dynamic behavior. They can be used for program optimization, failure diagnosis, collecting software metrics like coverage, test prioritization, etc. Two major obstacles to exploiting the full

potential of information they provide are: (*i*) performance overhead while collecting traces, and (*ii*) significant size of traces even for short execution scenarios. Reducing information output in an execution trace can r ...

Keywords: callback, code emulation, code replay, time-travel debugging, tracing

11 Extracting usability information from user interface events

David M. Hilbert, David F. Redmiles
December 2000 **ACM Computing Surveys (CSUR)**, Volume 32 Issue 4
Publisher: ACM Press

Full text available: pdf(1.50 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Modern window-based user interface systems generate user interface events as natural products of their normal operation. Because such events can be automatically captured and because they indicate user behavior with respect to an application's user interface, they have long been regarded as a potentially fruitful source of information regarding application usage and usability. However, because user interface events are typically voluminos and rich in detail, automated support is generally ...

Keywords: human-computer interaction, sequential data analysis, usability testing, user interface event monitoring

12 The design of an interactive online help desk in the Alexandria Digital Library

Robert Prince, Jianwen Su, Hong Tang, Yonggang Zhao
March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2
Publisher: ACM Press

Full text available: pdf(1.53 MB) Additional Information: full citation, abstract, references, citings, index terms

In large software systems such as digital libraries, electronic commerce applications, and customer support systems, the user interface and system are often complex and difficult to navigate. It is necessary to provide users with interactive online support to help users learn how to effectively use these applications. Such online help facilities can include providing tutorials and animated demonstrations, synchronized activities between users and system supporting staff for real time instruction ...

Keywords: collaboration, digital library, online help desk, online support, user interface

13 PADS: a domain-specific language for processing ad hoc data

Kathleen Fisher, Robert Gruber
June 2005 **ACM SIGPLAN Notices , Proceedings of the 2005 ACM SIGPLAN conference on Programming language design and implementation PLDI '05**, Volume 40 Issue 6
Publisher: ACM Press

Full text available: pdf(106.89 KB) Additional Information: full citation, abstract, references, citings, index terms

PADS is a declarative data description language that allows data analysts to describe both the physical layout of ad hoc data sources and semantic properties of that data. From such descriptions, the PADS compiler generates libraries and tools for manipulating the data, including parsing routines, statistical profiling tools, translation programs to produce well-behaved formats such as Xml or those required for loading relational databases, and tools

for running XQueries over raw PADS data sourc ...

Keywords: data description language, domain-specific languages

14 Architecture-driven platform independent deterministic replay for distributed hard real-time systems

Holger Giese, Stefan Henkler

July 2006 **Proceedings of the ISSTA 2006 workshop on Role of software architecture for testing and analysis ROSATEA '06**

Publisher: ACM Press

Full text available: pdf(219.54 KB) Additional Information: full citation, abstract, references, index terms

Distributed hard real-time systems have become a major component of many advanced technical products. Means to ensure their proper quality are thus of paramount importance. To ensure high quality software, besides preventive means also cost-effective techniques for defect removal are important. The later activity in practice includes testing in order to detect failures, subsequent diagnosis in order to pin down the observed failure to a defect, and finally the proper removal of the defect. In th ...

15 Testing II: Automated replay and failure detection for web applications

Sara Sprenkle, Emily Gibson, Sreedevi Sampath, Lori Pollock

November 2005 **Proceedings of the 20th IEEE/ACM international Conference on Automated software engineering ASE '05**

Publisher: ACM Press

Full text available: pdf(585.48 KB) Additional Information: full citation, abstract, references, citings, index terms

User-session-based testing of web applications gathers user sessions to create and continually update test suites based on real user input in the field. To support this approach during maintenance and beta testing phases, we have built an automated framework for testing web-based software that focuses on scalability and evolving the test suite automatically as the application's operational profile changes. This paper reports on the automation of the *replay* and *oracle* components for ...

Keywords: replay, software testing, test oracles, web applications

16 Storing a persistent transactional object heap on flash memory

Michal Spivak, Sivan Toledo

June 2006 **ACM SIGPLAN Notices , Proceedings of the 2006 ACM SIGPLAN/SIGBED conference on Language, compilers and tool support for embedded systems LCTES '06**, Volume 41 Issue 7

Publisher: ACM Press

Full text available: pdf(337.46 KB) Additional Information: full citation, abstract, references, index terms

We present the design and implementation of TinyStore, a persistent, transactional, garbage-collected memory-management system, designed to be called from the Java virtual machine of a Java Card. The system is designed for flash-based implementations of Java Card, a variant of the Java platform for smart cards. In the Java Card platform, objects are persistent by default. The platform supports transactions: a sequence of accesses to objects can be explicitly declared to constit ...

Keywords: nor flash, Java Card, flash, persistent heaps, persistent object stores, smart cards, transactions

17 Architecting in the Face of Uncertainty: An Experience Report

Ian Gorton, Jereme Haack

May 2004 **Proceedings of the 26th International Conference on Software Engineering ICSE '04**

Publisher: IEEE Computer Society

Full text available: pdf(218.04 KB) Additional Information: full citation, abstract, citings, index terms

Understanding an applicationýs functional and non-functionalrequirements is normally seen as essential fordeveloping a robust product suited to client needs. Thispaper describes our experiences in a project that, bynecessity, commenced well before concrete clientrequirements could be known. After a first version of theapplication was successfully released, emergingrequirements forced an evolution of the applicationarchitecture. The key reasons for this are explained,along with the architectural ...

18 Secure file system versioning at the block level

Jake Wires, Michael J. Feeley

March 2007 **ACM SIGOPS Operating Systems Review , Proceedings of the 2007 conference on EuroSys EuroSys '07**, Volume 41 Issue 3

Publisher: ACM Press

Full text available: pdf(406.68 KB) Additional Information: full citation, abstract, references

In typical file systems, valuable data is vulnerable to being accidentally or maliciously deleted or overwritten. Versioning file systems protect data from accidents by transparently retaining old versions, but do less well in protecting data from malicious attack. These systems remain vulnerable to attackers who gain unauthorized access to prune old file versions, who bypass the file system to directly manipulate storage, or who exploit bugs in any part of the operating system.

This p ...

19 Debugging concurrent programs

Charles E. McDowell, David P. Helmbold

December 1989 **ACM Computing Surveys (CSUR)**, Volume 21 Issue 4

Publisher: ACM Press

Full text available: pdf(2.86 MB) Additional Information: full citation, abstract, references, citings, index terms, review

The main problems associated with debugging concurrent programs are increased complexity, the "probe effect," nonrepeatability, and the lack of a synchronized global clock. The probe effect refers to the fact that any attempt to observe the behavior of a distributed system may change the behavior of that system. For some parallel programs, different executions with the same data will result in different results even without any attempt to observe the behavior. Even when the behavior can be ...

20 Rigorous specification and conformance testing techniques for network protocols, as applied to TCP, UDP, and sockets

Steve Bishop, Matthew Fairbairn, Michael Norrish, Peter Sewell, Michael Smith, Keith Wansbrough

August 2005 **ACM SIGCOMM Computer Communication Review , Proceedings of the 2005 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '05**, Volume 35 Issue 4

Publisher: ACM Press

Full text available: pdf(299.17 KB) Additional Information: full citation, abstract, references, citings, index terms

Network protocols are hard to implement correctly. Despite the existence of RFCs and other standards, implementations often have subtle differences and bugs. One reason for

this is that the specifications are typically informal, and hence inevitably contain ambiguities. Conformance testing against such specifications is challenging.In this paper we present a practical technique for rigorous protocol specification that supports specification-based testing. We have applied it to TCP, UDP, and the ...

Keywords: API, HOL, TCP/IP, conformance testing, higher-order logic, network protocols, operational semantics, sockets, specification

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1 Real-time shading

Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi Rost

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(7.39 MB) Additional Information: full citation, abstract

Real-time procedural shading was once seen as a distant dream. When the first version of this course was offered four years ago, real-time shading was possible, but only with one-of-a-kind hardware or by combining the effects of tens to hundreds of rendering passes. Today, almost every new computer comes with graphics hardware capable of interactively executing shaders of thousands to tens of thousands of instructions. This course has been redesigned to address today's real-time shading capabili ...

2 METRICS: a system architecture for design process optimization

Stephen Fenstermaker, David George, Andrew B. Kahng, Stefanus Mantik, Bart Thielges

June 2000 **Proceedings of the 37th conference on Design automation DAC '00**

Publisher: ACM Press

Full text available: pdf(119.16 KB) Additional Information: full citation, abstract, references, citings, index terms

We describe METRICS, a system to recover design productivity via new infrastructure for design process optimization. METRICS seeks to treat system design and implementation as a science, rather than an art. A key precept is that measuring a design process is a prerequisite to optimizing it and continuously achieving maximum productivity. METRICS (i) unobtrusively gathers characteristics of design artifacts, design process, and communication ...

3 Fast detection of communication patterns in distributed executions

Thomas Kunz, Michiel F. H. Seuren

November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research CASCON '97**

Publisher: IBM Press

Full text available: pdf(4.21 MB) Additional Information: full citation, abstract, references, index terms

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the

University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

4 Computing curricula 2001

September 2001 **Journal on Educational Resources in Computing (JERIC)**

Publisher: ACM Press

Full text available: pdf(613.63 KB) html(2.78 KB) Additional Information: full citation, references, citings, index terms

5 GPGPU: general purpose computation on graphics hardware

David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(63.03 MB) Additional Information: full citation, abstract, citings

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

6 Glift: Generic, efficient, random-access GPU data structures

Aaron E. Lefohn, Shubhabrata Sengupta, Joe Kniss, Robert Strzodka, John D. Owens

January 2006 **ACM Transactions on Graphics (TOG)**, Volume 25 Issue 1

Publisher: ACM Press

Full text available: pdf(1.52 MB) Additional Information: full citation, abstract, references, citings, index terms

This article presents Glift, an abstraction and generic template library for defining complex, random-access graphics processor (GPU) data structures. Like modern CPU data structure libraries, Glift enables GPU programmers to separate algorithms from data structure definitions; thereby greatly simplifying algorithmic development and enabling reusable and interchangeable data structures. We characterize a large body of previously published GPU data structures in terms of our abstraction and prese ...

Keywords: Adaptive, GPGPU, GPU, adaptive shadow maps, data structures, graphics hardware, multiresolution, octree textures, parallel computation

7 Frontmatter (TOC, Letters, Philosophy of computer science, Interviewers needed, Taking software requirements creation from folklore to analysis, SW components and product lines: from business to systems and technology, Software engineering survey)

September 2005 **ACM SIGSOFT Software Engineering Notes**, Volume 30 Issue 5

Publisher: ACM Press

Full text available: pdf(1.98 MB) Additional Information: full citation, index terms

8 An open-source CVE for programming education: a case study: An open-source CVE

for programming education: a case study
Andrew M. Phelps, Christopher A. Egert, Kevin J. Bierre, David M. Parks
July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**
Publisher: ACM Press
Full text available: pdf(7.92 MB) Additional Information: full citation, references

9 Level set and PDE methods for computer graphics
David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available: pdf(17.07 MB) Additional Information: full citation, abstract, citings

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

10 Modelling: Reveal: a tool to reverse engineer class diagrams
Sarah Matzko, Peter J. Clarke, Tanton H. Gibbs, Brian A. Malloy, James F. Power, Rosemary Monahan
February 2002 **Proceedings of the Fortieth International Conference on Tools Pacific: Objects for internet, mobile and embedded applications CRPIT '02**
Publisher: Australian Computer Society, Inc.
Full text available: pdf(1.00 MB) Additional Information: full citation, abstract, references, citings, index terms

Many systems are constructed without the use of modeling and visualization artifacts, due to constraints imposed by deadlines or a shortage of manpower. Nevertheless, such systems might profit from the visualization provided by diagrams to facilitate maintenance of the constructed system. In this paper, we present a tool, Reveal, to reverse engineer a class diagram from the C + + source code representation of the software. In Reveal, we remain faithful to the UML standard definition of a ...

Keywords: UML, automated construction, class diagram, object-oriented programming, reverse engineering, unified modeling language

11 Industrial sessions: middle-tier caching: Middle-tier database caching for e-business
Qiong Luo, Sailesh Krishnamurthy, C. Mohan, Hamid Pirahesh, Honguk Woo, Bruce G. Lindsay, Jeffrey F. Naughton
June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data SIGMOD '02**
Publisher: ACM Press
Full text available: pdf(1.20 MB) Additional Information: full citation, abstract, references, citings, index terms

While scaling up to the enormous and growing Internet population with unpredictable usage patterns, E-commerce applications face severe challenges in cost and manageability, especially for database servers that are deployed as those applications' backends in a multi-tier configuration. Middle-tier database caching is one solution to this problem. In this paper, we present a simple extension to the existing federated features in DB2 UDB, which enables a regular DB2 instance to become a DBCache wi ...

12 Innovative technologies of e-commerce: A template-based approach for mass customization of service-oriented e-business applications

Xiyong Zhu, Xingwang Zheng

August 2005 **Proceedings of the 7th international conference on Electronic commerce ICEC '05**

Publisher: ACM Press

Full text available: pdf(591.04 KB) Additional Information: full citation, abstract, references, index terms

With more and more successful implementation of e-business applications in various kinds of enterprises, business processes tend to be more standardized, the internal variations of e-business applications decrease. Meanwhile, new IT technology enables individual enterprise to demand more personalized software products to meet its specific requirements, the external varieties for e-business applications increase. This establishes the need and possibility for mass customization of e-business appli ...

Keywords: SOA, e-business services, software mass customization, template, toolkit

13 Measurement: A high-level programming environment for packet trace anonymization and transformation

Ruoming Pang, Vern Paxson

August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communica tions SIGCOMM '03**

Publisher: ACM Press

Full text available: pdf(251.27 KB) Additional Information: full citation, abstract, references, citings, index terms

Packet traces of operational Internet traffic are invaluable to network research, but public sharing of such traces is severely limited by the need to first remove all sensitive information. Current trace anonymization technology leaves only the packet headers intact, completely stripping the contents; to our knowledge, there are no publicly available traces of any significant size that contain packet payloads. We describe a new approach to transform and anonymize packet traces. Our tool provide ...

Keywords: anonymization, internet, measurement, network intrusion detection, packet trace, privacy, transformation

14 The Liberty Simulation Environment: A deliberate approach to high-level system modeling

Manish Vachharajani, Neil Vachharajani, David A. Penry, Jason A. Blome, Sharad Malik, David I. August

August 2006 **ACM Transactions on Computer Systems (TOCS)**, Volume 24 Issue 3

Publisher: ACM Press

Full text available: pdf(914.10 KB) Additional Information: full citation, abstract, references, index terms

In digital hardware system design, the quality of the product is directly related to the number of meaningful design alternatives properly considered. Unfortunately, existing modeling methodologies and tools have properties which make them less than ideal for rapid and accurate design-space exploration. This article identifies and evaluates the shortcomings of existing methods to motivate the Liberty Simulation Environment (LSE). LSE is a high-level modeling tool engineered to address these limi ...

Keywords: Liberty Simulation Environment (LSE), component reuse, simulator construction, structural modeling

15 (Special session) invited talks: virtual core based reuse methodology for SoC design: Synthesis for SoC architecture using VCores

Hiroaki Nishi, Michiaki Muraoka, Rafael K. Morizawa, Hideaki Yokota, Hideyuki Hamada

January 2003 **Proceedings of the 2003 conference on Asia South Pacific design automation ASPDAC**

Publisher: ACM Press

Full text available: pdf(360.56 KB) Additional Information: full citation, abstract, references, citings

In this paper, we propose a novel architecture synthesis method for SoC using VCores. VCores are reusable and configurable high-level descriptions. An initial SoC architecture, which consists of a CPU, buses, and peripherals, is generated based on an architecture template. The hardware and software tradeoff is possible on the architecture model after assignment of software VCores or hardware VCores. The assignment is based on the results of the architecture's performance estimation. We present a ...

16 Enhancements and evolution: Yet another network simulator

Mathieu Lacage, Thomas R. Henderson

October 2006 **Proceeding from the 2006 workshop on ns-2: the IP network simulator WNS2 '06**

Publisher: ACM Press

Full text available: pdf(183.55 KB) Additional Information: full citation, abstract, references, cited by, index terms

We report on the design objectives and initial design of a new discrete-event network simulator for the research community. Creating Yet Another Network Simulator (*yans*, http://yans.inria.fr/yans) is not the sort of prospect network researchers are happy to contemplate, but this effort may be timely given that *ns*-2 is considering a major revision and is evaluating new simulator cores. We describe why we did not choose to build on existing tools such as *ns-2, GTNetS*, and OPNE ...

17 An overview of the Trilinos project

Michael A. Heroux, Roscoe A. Bartlett, Vicki E. Howle, Robert J. Hoekstra, Jonathan J. Hu, Tamara G. Kolda, Richard B. Lehoucq, Kevin R. Long, Roger P. Pawlowski, Eric T. Phipps, Andrew G. Salinger, Heidi K. Thornquist, Ray S. Tuminaro, James M. Willenbring, Alan Williams, Kendall S. Stanley

September 2005 **ACM Transactions on Mathematical Software (TOMS)**, Volume 31 Issue 3

Publisher: ACM Press

Full text available: pdf(414.72 KB) Additional Information: full citation, abstract, references, citings, index terms

The Trilinos Project is an effort to facilitate the design, development, integration, and ongoing support of mathematical software libraries within an object-oriented framework for the solution of large-scale, complex multiphysics engineering and scientific problems. Trilinos addresses two fundamental issues of developing software for these problems: (i) providing a streamlined process and set of tools for development of new algorithmic implementations and (ii) promoting interoperability of inde ...

Keywords: Software Quality Engineering, Software framework, interfaces

18 Language-independent aspect-oriented programming

Donal Lafferty, Vinny Cahill

October 2003 **ACM SIGPLAN Notices , Proceedings of the 18th annual ACM SIGPLAN conference on Object-oriented programing, systems, languages, and applications OOPSLA '03**, Volume 38 Issue 11

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index

Full text available: pdf(1.26 MB) terms

The term aspect-oriented programming (AOP) has come to describe the set of programming mechanisms developed specifically to express crosscutting concerns. Since crosscutting concerns cannot be properly modularized within object-oriented programming, they are expressed as aspects and are composed, or woven, with traditionally encapsulated functionality referred to as components.Many AOP models exist, but their implementations are typically coupled with a single language. To allow weaving of exist ...

Keywords: Weave.NET, aspect-oriented programming, common language infrastructure, language-independence

19 Portlet syndication: Raising variability concerns

Oscar Diaz, Juan J. Rodriguez
November 2005 **ACM Transactions on Internet Technology (TOIT)**, Volume 5 Issue 4
Publisher: ACM Press
Full text available: pdf(4.63 MB) Additional Information: full citation, abstract, references, index terms

A Portlet is a multistep, user-facing application delivered through a Web application (e.g., a portal). OASIS approved standard, WSRP, is an attempt to standardize the interface between the provider and the consumer of the Portlet. This initiative promotes Portlet interoperability, componentware practices, and the existence of a Portlet market. This work argues that the diversity of the settings where a Portlet might be syndicated recommends that Portlets be instrumented for variability, and thi ...

Keywords: Portlet, portal applications, product lines

20 Amit - the situation manager

Asaf Adi, Opher Etzion
May 2004 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 13 Issue 2
Publisher: Springer-Verlag New York, Inc.
Full text available: pdf(286.10 KB) Additional Information: full citation, abstract, citings, index terms

This paper presents the "situation manager", a tool that includes both a language and an efficient runtime execution mechanism aimed at reducing the complexity of active applications. This tool follows the observation that in many cases there is a gap between current tools that enable one to react to a single event (following the ECA: event-condition-action paradigm) and the reality in which a single event may not require any reaction; however, the reaction should be given to pattern ...

Keywords: Active databases, Active technology, Composite events, High-level languages

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